

playing music, and creating works of art, and why they find them enjoyable. He labeled the feeling of peak enjoyment as “flow” and documented the components that combine to produce this experience. The process of flow is shown in Figure 11.2. The two main variables of the flow experience are challenges and skills. These are shown on the axes of the figure. One may experience flow when the task offers little challenge and one’s skills are not well developed (A1). As one develops higher skill levels, the task will become boring because it no longer provides a challenge (A2). On the other hand, one may experience anxiety if the task is too difficult (A3). If, however, one gradually develops higher skill levels as the task becomes more difficult (A4), it is possible to maintain the flow experience. The goal of an instructional game is to keep the learner in the flow channel by increasing the challenge levels of the game as the learner’s skills improve.

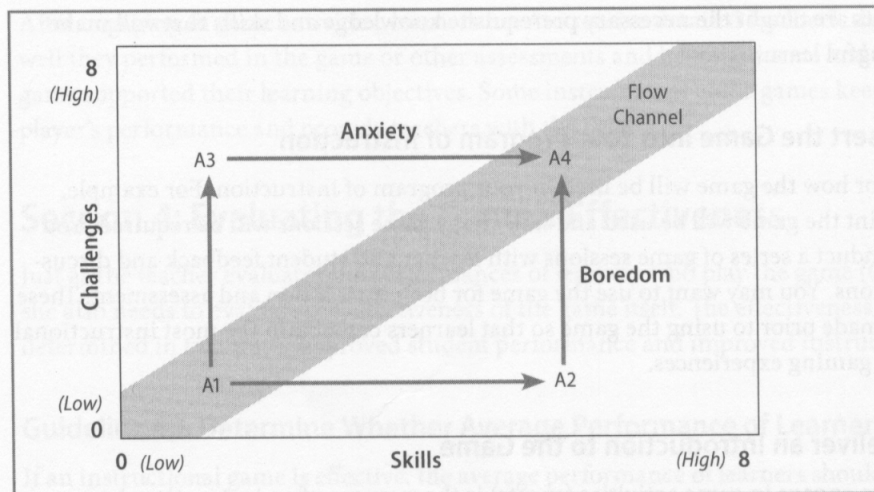


FIGURE 11.2 ► The process of “flow”

### Guideline 2.2. Review the Requirements of the Game

Before your students can play any game, they must understand the rules and constraints of the game so they can function successfully in the game world. This may require them to learn various skills that are game-specific. Almost as important as the incorporation of realistic task requirements in the game is the elimination of as many unrealistic game requirements as possible. If learners are required to spend too much intellectual energy on learning and performing game activities that are not related to your instructional objectives, they will not be able to focus their attention on instructionally relevant game activities. Any game requirements that are not directly relevant to instructional objectives need to be recognized and explained to the learners both before they play the game and during their performance review session after playing the game (see Guidelines 3.2 and 3.4).

### Guideline 2.3. Develop Introductory Materials for the Game

After you have selected an instructional game, you need to decide how you will use it in your classroom. Your first activity should be to develop the materials to introduce your students to the game. The characteristics and requirements of the game will determine the requirements of these

introductory materials. The introductory materials should help students focus on the events of the game that support the class's instructional objectives. The introductory materials should also provide cues and aids to help learners complete game-specific activities quickly and easily so they can get on with the instructional purposes of the game.

## Section 3: Using a Game

How you use a game is as important as the characteristics of the game itself (Hays, 2005, 2006, 2008). Plan how to use the game as a tool that supports the goals of your district's curriculum and your course's or class's objectives. In very few cases can one effectively use a game to provide stand-alone instruction. In any case, the game needs to be embedded into the instructional program so students are taught the necessary prerequisite knowledge and skills that will make the game a meaningful learning tool.

### Guideline 3.1. Insert the Game into Your Program of Instruction

Have a clear plan for how the game will be used in your program of instruction. For example, decide at which point the game will be used and how many game sessions will be required. You might decide to conduct a series of game sessions with teacher and student feedback and discussions between sessions. You may want to use the game for both instruction and assessment. These decisions must be made prior to using the game so that learners can obtain the most instructional benefits from their gaming experiences.

### ✓ Guideline 3.2. Deliver an Introduction to the Game

Allowing learners to engage in game activities (events) is the purpose of an instructional game. It is important that learners focus on the game events rather than wasting time and energy on learning how to play the game or on activities that do not support their instructional objectives. Your introduction should be based on the plans and materials developed under Guideline 2.3.

**Guideline 3.2.1.** Explain how to play the game. The introduction to the game should supply the learners with all of the information and assistance necessary for them to begin playing the game. Tell them not to worry about trying to figure out game-specific skills at this time; reassure them that the game will explain these skills and will give them time to practice and that you will help them if they need it while they play the game. Their focus should be on their experiences during important game events.

**Guideline 3.2.2.** Explain how game events support instructional objectives. In order to use a game as an instructional tool effectively, learners must understand why they are playing the game and how gameplay supports the class's instructional objectives. This should also be explained during the introduction to the game and repeated during the feedback session (see Guideline 3.4). The teacher could begin the feedback session by asking the students to explain why they have been playing the game.

### **Guideline 3.3. Measure Performance**

The only way to determine whether students have learned new knowledge or skills is to measure their performance (Hays, 2006). After playing the game, students should be able to perform better, using the knowledge and skills learned in the game. Measure their performance using either existing performance measures, like tests or evaluation activities, or newly developed performance measures, such as evaluation game sessions. If their performances have not improved, the learners probably need additional instruction or game sessions, or you may need to change how you use the game.

### **Guideline 3.4. Deliver Detailed Performance Feedback**

After engaging in game activities, learners need to receive detailed feedback that explains how well they performed in the game or other assessments and how the events and activities in the game supported their learning objectives. Some instructional video games keep track of each player's performance and provide teachers with the details.

## **Section 4: Evaluating the Game's Effectiveness**

Just as the teacher evaluates the performances of learners who play the game (Guideline 3.3), he or she also needs to evaluate the effectiveness of the game itself. The effectiveness of the game can be determined in two ways: improved student performance and improved instructional efficiency.

### **Guideline 4.1. Determine Whether Average Performance of Learners Has Improved**

If an instructional game is effective, the average performance of learners should show improvement. Records of performance obtained during the use of the game should be tabulated, and average performance improvements should be documented. If the average performance of learners has decreased, you should stop using this game and use an alternate instructional approach, or consult the technology coordinator and other teachers to see whether they know of other, more efficacious games. If the average student performance is the same as it is with other instructional approaches and students report generally positive experiences, you may decide to continue using the game and to adjust aspects of it until it improves the efficiency of your instructional program.

### **Guideline 4.2. Determine Whether the Instructional Program Is More Efficient**

If the average performance of your students has improved or remained the same, an instructional game may still be the preferred instructional method because it has improved the efficiency of your instructional program. You can determine whether this is the case by comparing the efficiency of your instructional program including the game with your previous instructional approach. You will already have collected some data from your previous instructional approach (Guideline 1.2). Two of the measures of efficiency you might use are (a) time spent to complete this student learning objective, and (b) the number of learners who completed the learning objective in a given time period.